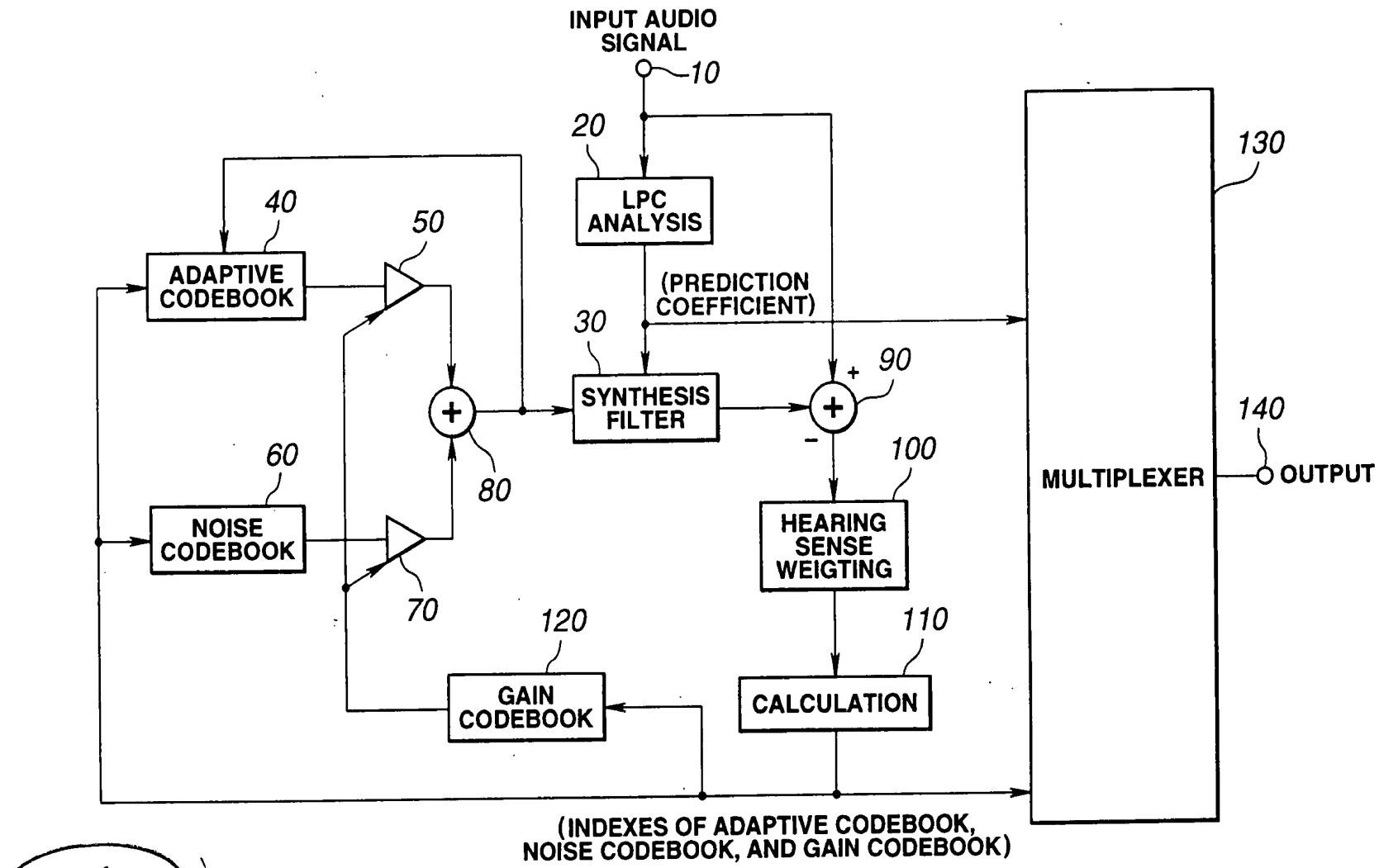
INPUT AUDIO SIGNAL
10
20
LPC ANALYSIS
(PREDICTION COEFFICIENT)
30
40
ADAPTIVE CODEBOOK
50
60
NOISE CODEBOOK
70
80
SYNTHESIS FILTER
90
100
HEARING SENSE WEIGTING
110
CALCULATION
120
GAIN CODEBOOK
130
MULTIPLEXER
140
OUTPUT
(INDEXES OF ADAPTIVE CODEBOOK, NOISE CODEBOOK, AND GAIN CODEBOOK)

FIG.1

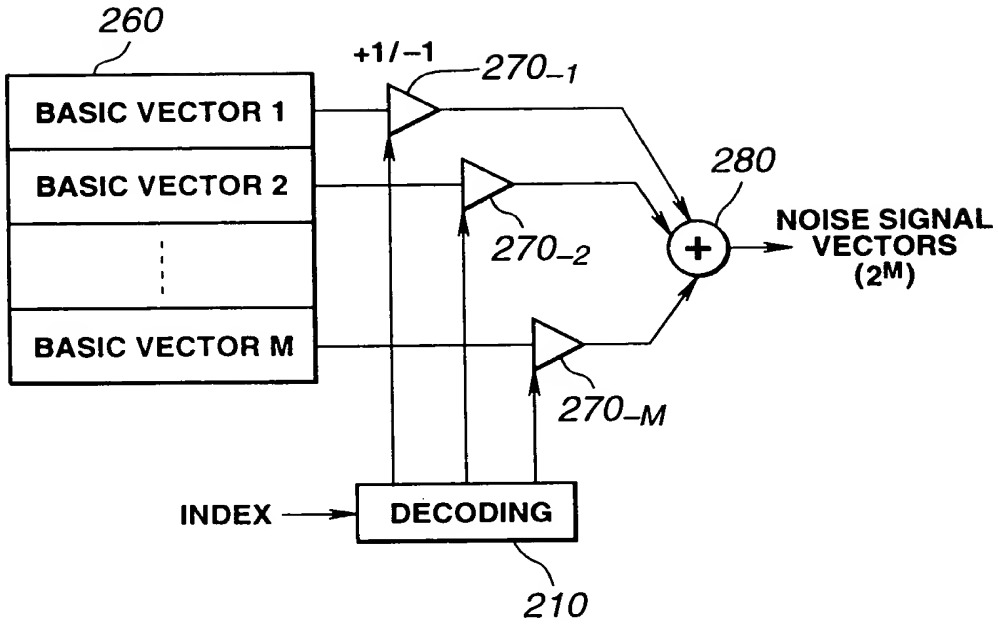
260
+1/−1
270_1
BASIC VECTOR 1
BASIC VECTOR 2
BASIC VECTOR M
280
NOISE SIGNAL VECTORS (2^M)
270_2
270_M
INDEX
DECODING
210

FIG.2

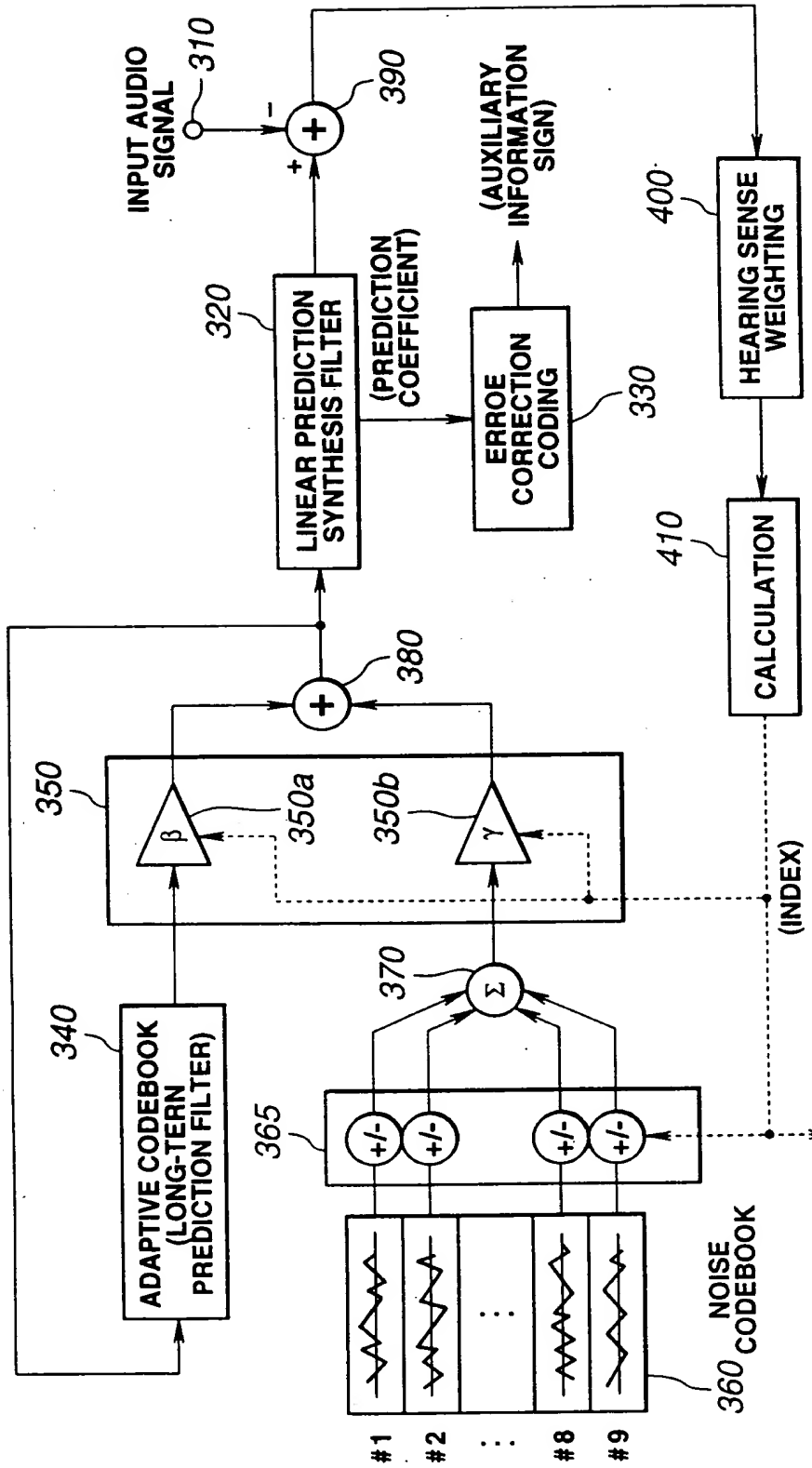

FIG.3

N	BIT V 4 3 2 1
0	0 0 0 0
1	0 0 0 1
2	0 0 1 1
3	0 0 1 0
4	0 1 1 0
5	0 1 1 1
6	0 1 0 1
7	0 1 0 0
8	1 1 0 0
9	1 1 0 1
10	1 1 1 1
11	1 1 1 0
12	1 0 1 0
13	1 0 1 1
14	1 0 0 1
15	1 0 0 0

425

426

FIG.4

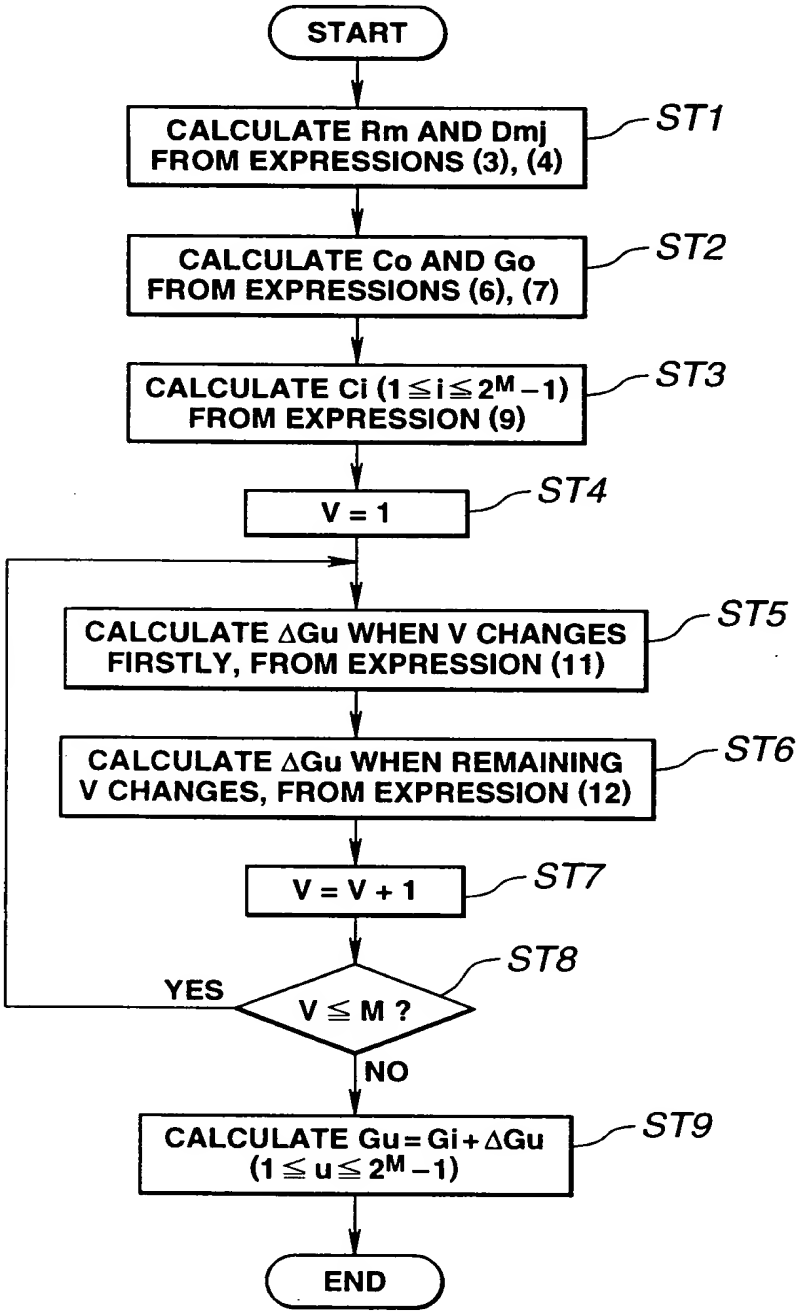
START
CALCULATE Rm AND Dmj FROM EXPRESSIONS (3), (4)
ST1
CALCULATE Co AND Go FROM EXPRESSIONS (6), (7)
ST2
CALCULATE Ci (1≦i≦2M−1) FROM EXPRESSION (9)
ST3
V = 1
ST4
CALCULATE ΔGu WHEN V CHANGES FIRSTLY, FROM EXPRESSION (11)
ST5
CALCULATE ΔGu WHEN REMAINING V CHANGES, FROM EXPRESSION (12)
ST6
V = V + 1
ST7
YES
V ≦ M ?
ST8
NO
CALCULATE Gu=Gi+ΔGu (1≦u≦2M−1)
ST9
END

FIG.5

M	MULTIPLICATION		
	PRESENT INVENTION	CONVENTIONAL	RATIO
4	57	90	0.633
5	118	248	0.475
6	231	630	0.367
7	444	1524	0.291
8	853	3570	0.239

FIG.6A

M	ADDITION AND SUBTRACTION		
	PRESENT INVENTION	CONVENTIONAL	RATIO
4	49	45	1.089
5	103	124	0.831
6	207	315	0.657
7	409	762	0.537
8	805	1785	0.451

FIG.6B

M	WRITING TO MEMORY		
	PRESENT INVENTION	CONVENTIONAL	RATIO
4	30	15	2.0
5	62	31	2.0
6	126	63	2.0
7	254	127	2.0
8	510	255	2.0

FIG.6C

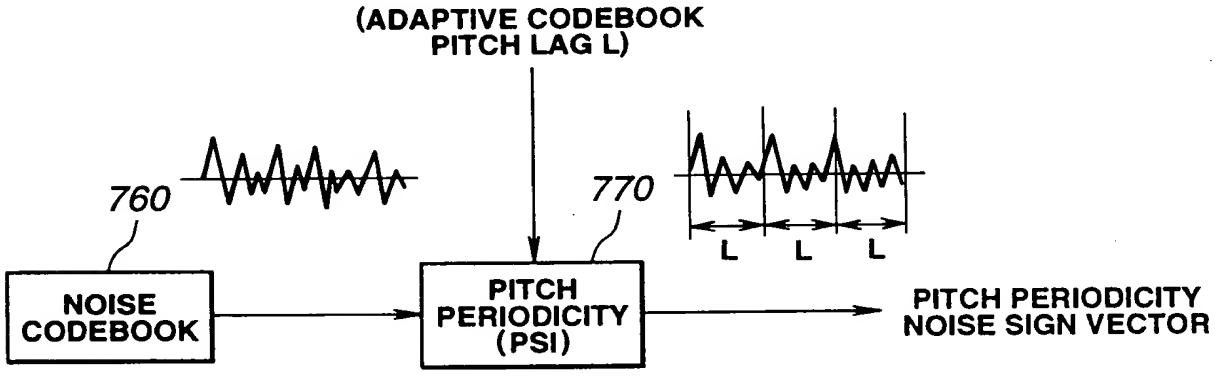

FIG.7

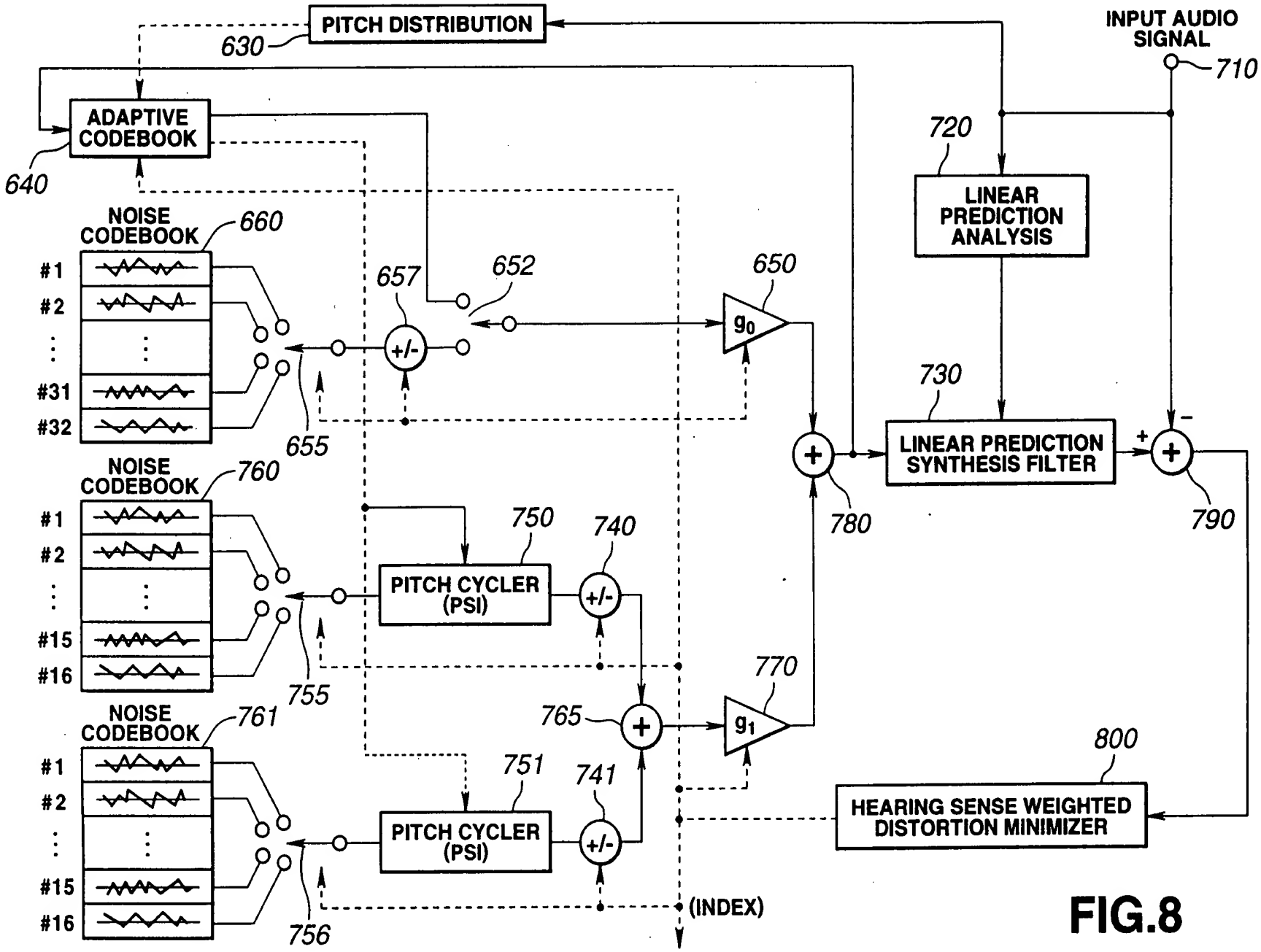
PITCH DISTRIBUTION
630
INPUT AUDIO SIGNAL
710
ADAPTIVE CODEBOOK
640
720
LINEAR PREDICTION ANALYSIS
NOISE CODEBOOK
660
#1
#2
#31
#32
657
652
650
g_0
655
730
LINEAR PREDICTION SYNTHESIS FILTER
780
790
NOISE CODEBOOK
760
#1
#2
#15
#16
750
740
PITCH CYCLER (PSI)
770
755
765
g_1
NOISE CODEBOOK
761
#1
#2
#15
#16
751
741
PITCH CYCLER (PSI)
800
HEARING SENSE WEIGHTED DISTORTION MINIMIZER
(INDEX)
756

FIG.8